

Laser Ion Source Optimization and Development at GANIL

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Resonant Ionisation Laser Ion Source (RILIS) has emerged as an important technique in many facilities for its reliability and quality to generate selective and efficient Radioactive Ion Beams (RIBs). GISELE (GANIL Ion Source using Electron Laser Excitation) is an off-line test bench RILIS developed to study a fully operational laser ion source at GANIL. The aim of this project is to find the best technical solution which combines high selectivity and ionization efficiency with small ion beam emittance and stable long term operation. The ion source body has been designed as a modular system to investigate different experimental approaches by varying the geometry and the tube design parameters to compare and to develop the future on-line laser ion source. Different ion source geometries were tested in order to improve the efficiency and reduce the emittance. Latest results concerning the contaminant reduction inside the ion source either by, electric field potential or low work function materials, will be presented. In addition, a method to measure the energy distribution of the ion beam as a function of the time of flight will be discussed. GISELE has been funded by the French Research National Agency (ANR) and is under development at GANIL in collaboration with IPN Orsay (France), Univ. of Mainz (Germany), TRIUMF (Canada) and CERN (Switzerland). This project has received funding from the European Union's Seventh Framework Programme for research, technological development and demonstration under grant agreement no 289191.

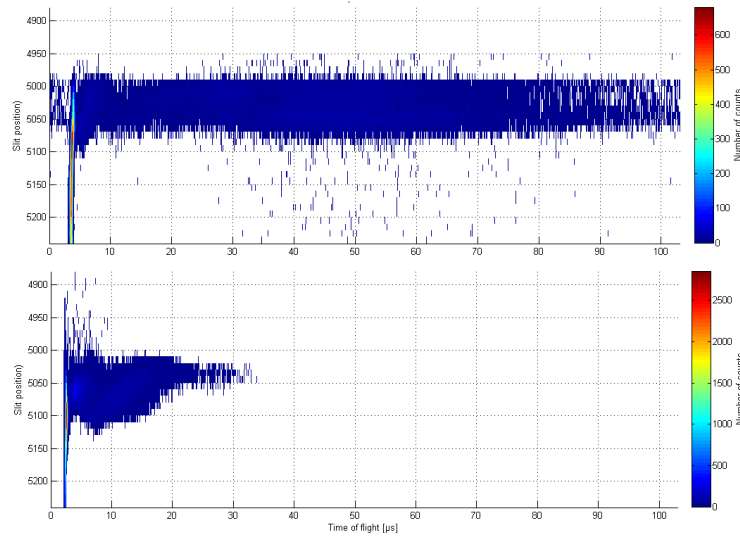


Figure. Time profile structures of ^{124}Sn measured by the slit-grid method, applying positive and negative voltage in the ionizer (respectively).